US Dept. of Commerce Pat. & Trademark Office

Attorney's Docket No. 22122

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 USC 371

US. Application No. (if known) 10/069424

INTERNATIONAL APP. NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/GB00/03464	8 September 2000	9 September 1999

TITLE OF INVENTION

FENCING SYSTEM

APPLICANT(S) FOR DO/EO/US

Roger TIPPLE

Applicant herewith submits to the United States Designated/Elected Office (DO/EU/US) the following .

1. ■ This is a **FIRST** submission of items concerning a filing under 35 USC 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 USC 371.
3. ☐ This is an express request to begin national examination procedures (35 USC 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 USC 317(b) and PCT Articles 22 and 39(1).
4. ■ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ■ A copy of the International Application as filed (35 USC 371(c)(2)).
   a. ■ is transmitted herewith (required only if not transmitted by the International Bureau.
   b. ☐ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Patent Office.
6. ☐ A translation of the International application into English.
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 USC 371(c)(3)).
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau.
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however the time limit for making such amendments has NOT expired.
   d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 USC 371(c)(3).
9. ■ An oath or declaration of the inventor(s) (35 USC 371(c)(4).
10. ■ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 USC 371(c)(5)).

Items 11. to 16. below concern documents or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ■ An Assignment for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ■ A FIRST preliminary amendment.
    ☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ■ Other items of information.
    Drawing (1 sheets)
    References
    PTO-1449

US Application no (if known)	International Application no.	Attorney's Docket No.
10/069424	PCT/GB00/03464	22122

17. The following fees are submitted:	CALCULATIONS	PTO USE ONLY
Basic National Fee (37 CFR 1.492(a)(1)-(5):		
Search report has been prepared by the EPO or JP $890.00		
Int'l prel. exam. fee paid to USPTO (37 CFR 1.482) $710.00		
No int'l prel. exam. fee paid to USPTO (37 CFR 1.482) but int'l search fee paid to USPTO (37 CFR 1.445(a)(2) $740.00		
Neither int'l prel. exam fee (37 CFR 1.482) nor int'l search fee (37 CFR 1.455(a)(2)) paid to USPTO $1040.00		
Intl. prel. exam. fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Art. 33(2-4) $100.00	**$1,040**	
ENTER APPROPRIATE BASIC FEE AMOUNT		
Surcharge of $130.00 for furnishing oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).		

CLAIMS	NO. FILED	NO. EXTRA	RATE		
Total claims	**10**	**0**	$18	**$0**	
Ind. claims	**0**	**0**	**$84**	**$0**	
MULTIPLE DEP. CLAIM(S) (if applicable) **(see prel. amt.)**			**280**		
TOTAL OF ABOVE CALCULATIONS				**$1,040**	
Reduction of ½ for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (37 CFR 1.2, 1.27, 1.28)				**$0**	
SUBTOTAL				**$1,040**	
Processing fee of $130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)).					
TOTAL NATIONAL FEE				**$1,040**	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The Assignment may be accompanied by an appropriate PTO-1595 cover sheet (37 CFR 3.28, 3.39)				**$40**	
TOTAL FEES ENCLOSED				**$1,080**	
				Amt to be refunded	
				Amt to be charged	

a. ☐ A check in the amount of **$1040** to cover the above fees is enclosed
b. ☐ Please charge my deposit account 18-2025 **$00.00** to cover the above fees. A copy of this sheet is enclosed.
c. ■ Please charge the amount due to the credit card identified in the attached PTO-2038.
d. ■ The commissioner is authorized to charge any additional fees which may be required or credit any overpayment to deposit account 18-2025. A copy of this sheet is enclosed
e. ■ A PTO-2038 in the amount of **$40** to cover recordal of the Assignment is enclosed

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

Send all correspondence to:

The Firm of Karl F. Ross P.C.
5676 Riverdale Ave. Box 900
Riverdale (Bronx), NY 10471

Herbert Dubno, Reg. No. 19,752

22122

IN THE U.S. PATENT AND TRADEMARK OFFICE

Inventor	**Roger TIPPLE**
Patent App.	**Not known (US Nat'l phase of PCT/GB00/03464)**
Filed	**Concurrently herewith**
For	**FENCING SYSTEM**
Art Unit	**Not known**

Hon. Commissioner of Patents
Washington, DC 20231

PRELIMINARY AMENDMENT

Prior to examination of the above-identified application, please amend as follows:

In the Claims (amended claims):

Claim 3, line 1, delete "either of claims 1 or 2" insert instead -- claim 1 --,

Throughout claims 4, 5, and 6, line 1, delete "any preceding claim", insert instead -- claim 1 --,

Claim 7, line 1, delete "any of claims 3-6", insert instead -- claim 3 --,

In claims 8 and 9, line 1, delete "any preceding claim", insert instead -- claim 1 --,

In claim 10, line 1, delete "any of claims 1-8", insert instead -- claim 1 --.

Atty's 22122 Pat. App. Not known - US phase of PCT/GB00/03464

This preliminary amendment is submitted just to save claim charges.

Respectfully submitted,
The Firm of Karl F. ~~Ross~~ P.C.

By: Herbert Dubno, Reg. No. 19,752
Attorney for Applicant

11 February 2002
5676 Riverdale Avenue Box 900
Bronx, NY 10471-0900
Cust. No.: 535
Tel: (718) 884-6600
Fax: (718) 601-1099
rg
Enclosures: set of marked-up claims
set of clean claims

AMENDED CLAIMS

1. A fencing system including a plurality of pales, at least one horizontal rail, and fastening means;

each pale including a tubular wall;

and characterised in that the tubular wall defines a generally concave or re-entrant external surface facing the rail,

the fastening means engaging the said surface so as to fasten the pale to the rail.

2. A fencing system according to claim 1, characterised in that the concave or re-entrant surface defines a space between the pale and the rail, and the fastening means pass through the space,

such that the fastening means draw the concave or re-entrant surface towards the rail so as to press the wall resiliently against the rail.

3. A fencing system according to (either of claims 1 or 2), characterised in that the pale includes a generally convex outer surface facing away from the rail.

4. A fencing system according to (any preceding claim), characterised in that the concave or re-entrant surface includes a flat central portion, and the fastening means engage therewith.

5. A fencing system according to (any preceding claim), characterised in that the concave or re-entrant surface includes a thickened portion, and the fastening means engage therewith.

6. A fencing system according to claim 1, characterised in that the concave or re-entrant surface further includes a threaded hole, and the fastening means comprise a bolt or the like which engages in the threaded hole.

7. A fencing system according to claim 3, characterised in that the pale has a generally crescent shaped hollow cross section, the cross section including rounded regions where the concave or re-entrant surface meets the convex surface, the rounded regions abutting the rail.

8. A fencing system according to claim 1, characterised in that the pale includes longitudinal indentations, the indentations inducing buckling of the pale when the pale is subjected to a predetermined force, the force being less than that required to break the fastening means and so detach the pale from the rail.

9. A method of erecting a fencing system as defined in claim 1, comprising fixing the rail horizontally in its intended final position, and fastening the pales to the rail.

10. A pale as defined in claim 1.

2422

AMENDED CLAIMS

1. A fencing system including a plurality of pales, at least one horizontal rail, and fastening means;

each pale including a tubular wall;

and characterised in that the tubular wall defines a generally concave or re-entrant external surface facing the rail,

the fastening means engaging the said surface so as to fasten the pale to the rail.

2. A fencing system according to claim 1, characterised in that the concave or re-entrant surface defines a space between the pale and the rail, and the fastening means pass through the space,

such that the fastening means draw the concave or re-entrant surface towards the rail so as to press the wall resiliently against the rail.

3. A fencing system according to claim 1 , characterised in that the pale includes a generally convex outer surface facing away from the rail.

4. A fencing system according to claim 1 , characterised in that the concave or re-entrant surface includes a flat central portion, and the fastening means engage therewith.

5. A fencing system according to claim 1 , characterised in that the concave or re-entrant surface includes a thickened portion, and the fastening means engage therewith.

6. A fencing system according to claim 1, characterised in that the concave or re-entrant surface further includes a threaded hole, and the fastening means comprise a bolt or the like which engages in the threaded hole.

7. A fencing system according to claim 1, characterised in that the pale has a generally crescent shaped hollow cross section, the cross section including rounded regions where the concave or re-entrant surface meets the convex surface, the rounded regions abutting the rail.

8. A fencing system according to claim 1, characterised in that the pale includes longitudinal indentations, the indentations inducing buckling of the pale when the pale is subjected to a predetermined force, the force being less than that required to break the fastening means and so detach the pale from the rail.

9. A method of erecting a fencing system as defined in claim 1, comprising fixing the rail horizontally in its intended final position, and fastening the pales to the rail.

10. A pale as defined in claim 1.

Fencing System

The present invention relates to a fencing system, in particular, but not exclusively, to palisade fencing.

In a known type of palisade fencing, vertical pales are attached to a number of horizontal rails. These in turn are attached to vertical posts, which are set in the ground. The pales are usually bolted or riveted to the horizontal rails.

A pale is conventionally a strip of material such as metal of generally curved cross section, and is mounted upon the horizontal rails by its concave surface, so as to present its convex surface. When using such a palisade for an enclosed boundary, these convex surfaces are usually facing outwards. A known pale has a cross section of a flattened trefoil shape. Such a pale is usually formed by cold rolling a strip of metal.

Holes through the thickness of the pale are formed, each hole corresponding to a hole in the horizontal rail to which the pale is to be attached. A bolt is then used to fasten the pale and the horizontal rail, the head of the bolt being upon the convex surface of the pale. Similar attachment means such as rivets or the like, may be substituted.

This bolt head is very apparent, and offers an enticing target for vandals. Should the bolt head be removed, by being sheared off with a cold chisel for example, the pales may be removed and access gained to the area enclosed by the palisade. Also, while a pale with a generally curved cross section has good structural strength axially, it has poor strength perpendicular to the axis.

FR-A-2309118 shows a fence with hollow pales attached to rails by bolts, screws or the like.

GB 2 241 721 (Murphy et al) discloses a method of joining the pales to the horizontal rails without using bolts, rivets or the like. The pale, having a cross section of a flattened trefoil shape, also features a lip along each vertical edge. A clamping plate engages with these lips, and this is then bolted or riveted to the horizontal rail. In this manner the fastening means is concealed from someone on the outside of the boundary. Similarly to a conventional pale, this pale is cold rolled.

Like a conventional pale, the pale disclosed in Murphy has poor strength perpendicular to its axis. Also the lips may deform if the pale is pulled upon, so allowing the pale to be detached from the horizontal rails.

The object of the present invention is to provide a system of fencing which is both structurally strong, and conceals its means of attaching the component parts when regarded from one side of the fencing.

According to the present invention there is provided a fencing system including a plurality of pales, at least one horizontal rail, and fastening means; each pale including a tubular wall; and characterised in that the tubular wall defines a generally concave or re-entrant external surface facing the rail, the fastening means engaging the said surface so as to fasten the pale to the rail.

According to a further aspect of the invention there is provided a method of erecting a fencing system as defined herein, comprising fixing the rail horizontally in its intended final position, and fastening the pales to the rail.

According to a yet further aspect of the invention there is provided a pale as defined herein.

The rail may include a substantially flat surface against which the pales are set, wherein the pales include a tubular cross section comprising a tubular wall a part of which is provided with holes through which a bolt or the like may pass to secure the pales. Each pale may have a substantially hollow section which includes a generally concave surface, the securement means engaging with this surface and being concealed by this surface when the pale is regarded from the side of the pale opposite to the concave surface.

Preferably the concave surface of the pale and surface of the rail (or an intermediate member situated between the rail and the pale) which it faces are, at least before securement, of different shapes so that a portion of the concave surface is not directly in contact with the rail, and the securement means pull upon this portion of the concave surface of the pale such that it becomes prestressed.

Preferably the securement means include a bolt passing through both the rail and the concave surface. Preferably the generally concave surface includes a flat central portion. The pale is preferably formed by cold rolling or welding round tube into the desired cross section. The pale can be formed directly from strip by forming the strip into a tube and then welding it and then forming the tube into the desired cross section. Alternatively the pale can be cold formed from pre-made tube. The pale may also be conveniently made by extrusion.

The pale, when viewed in cross section, has a rear wall comprising a curved surface which is arranged against the horizontal rails and attached thereto, this rear wall forming part of the hollow section. When the fence is approached from the front, the concavity of the rear wall will shield the securement means.

Furthermore, a securement means, such as a bolt, common to both the rail and the pale and which tends to pull the curved surface of the pale towards the rail, will tend to flatten the concavity and prestress the pale, making the pale more rigid against the rail and making it very difficult to gain access to the securement means through the regions where the rail and pale abut.

A fencing system embodying the invention will now be described, by way of example, with reference to the drawings, of which;

Figure 1 shows a sectional view of the pale and the horizontal rail at the attachment point.

Referring to Figure 1, the pale 20 has a generally crescent shaped hollow cross section, including a curved front wall 22, and a curved back wall 23. Rather than cusps, the regions 25,26 where the front and back walls meet are rounded. The pale then has a concave surface (the back wall 23), and a convex surface (the front wall 22).

The back wall 23 is placed against the rail 10, so that the rounded portions 25,26 rest directly against the rail. Each pale has a hole 28 centrally located in the concave surface, and the rail has corresponding holes 29 along its length. To secure the pale to the rail, the two holes 28,29 are aligned and a bolt 15 introduced to them. The generally concave surface of the back wall is substantially flat at the central region where the hole occurs. This makes it easier to form the hole 28 in the pale, and easier to introduce the bolt to the hole 28.

The hole 28 in the pale is such a size that the thread of the bolt 15 engages with it, whilst the hole 29 of the rail is somewhat larger, the bolt being constrained against the rail by its head. The hole 28 is a threaded hole and in order to provide sufficient engagement with the thread of the bolt, the corresponding female thread will have to extend to a greater extent than the thickness of the wall of the pale. This additional female thread can be provided by thickening of the wall at that point, or by providing a separate nut means to the pale at the hole. Conveniently this may be provided by a threaded pot rivet which is introduced into the hole when the pale is connected to the rail from the rail side and expands to form a threaded part on the pale side of the hole 28. Alternatively a flow drilling may be used which creates an extended threaded portion from the existing hole which could be achieved by means of a self tapping bolt means.

As the bolt is tightened, the back wall 23 is drawn by the bolt's thread towards the rail 10. The crescent shape of the pale is drawn somewhat flatter as the pale is stressed.

When the pale is attached to the rail in this prestressed state, the securing bolt 15 is covered by the overhanging portions of the pale 20 when considered facing the front convex wall of the pale. In order to remove the pale from this side of the fencing, an intruder would have to force a tool or lever between one of the rounded portions 25,26 and the rail. This is difficult, since a large force is needed to overcome the prestressing of the pale.

When conventional pales are removed, the intruder will sometimes conceal that fact by resting the removed pales loosely against the pale, or temporarily fixing the pales, with chewing gum for example. To a casual

observer, the pales look undamaged, but the intruder may conveniently remove the pales to gain access to the fenced off region on subsequent occasions.

The pale illustrated in figure 1 includes indentations 31,32 which run the length of the pale. When a large predetermined force is applied between pale and the rail, the pale collapses and buckles. This occurs before the bolt fails. This buckling makes it obvious from a distance that the pale has been tampered with and needs replacing. Means for testing for failed bolts or rivets have been devised such as passing along the fence with a stick rapping against the pales and detecting the change in the sound which would indicate a faulty bolt or rivet. Such labour intensive testing methods are no longer required with the fencing system of this invention.

The particular shape of the cross section of the pale and in particular the indentations 32 are important in determining the mode of failure of the pale which determines nature of the collapse and makes it possible for the pale to be observed as having failed.

The hollow section of the pale provides great strength and rigidity perpendicular to the pale's axis, whilst losing none of the axial strength.

The horizontal rails may then be attached to vertical posts embedded in the ground in the conventional manner.

The pale is formed by forming a strip first into a round tubular cross section and welding it and subsequently forming the welded tube into the desired cross section if required, though other methods could be employed. For example, the pale may be is formed by rolling a shape having a similar

cross section but with an open shape instead of the hollow section, and then bent and welding the shape to form the tubular section.

The pale may also be formed by extruding metal through an aperture of the required shape to produce the required cross section. Other materials, such as composite materials, could equally well be used.

At the top of the pale, the front wall could be axially subdivided and the resulting strips flared out to form an upper projection, known as a topping, in a similar way to conventional pales. Alternatively, the hollow section could be left open, and a topping fitted into the open top of the pale.

The horizontal rail 10 illustrated here is a standard strip, though rails having other cross sections could be used with equal facility.

Equally, the rail illustrated has a uniform, flat surface facing the concave surface of the pale. The rail surface could though take a variety of shapes. It could be a convex surface with a curvature less than that of the concave surface of the pale. It could also be a convex shape corresponding to the concavity of the pale, and although no prestressing will occur, the bolt will be concealed by the pale.

The concealing portion of the pale need not be smoothly curved, but may be a re-entrant shape composed of flat surfaces and sharp angles, even to the extent of being rectangular. Naturally, the pale need not abut directly against the rail, but an intermediate member could be inserted between the rail and the pale.

AMENDED CLAIMS

1. A fencing system including a plurality of pales, at least one horizontal rail, and fastening means;

each pale including a tubular wall;

and characterised in that the tubular wall defines a generally concave or re-entrant external surface facing the rail,

the fastening means engaging the said surface so as to fasten the pale to the rail.

2. A fencing system according to claim 1, characterised in that the concave or re-entrant surface defines a space between the pale and the rail, and the fastening means pass through the space,

such that the fastening means draw the concave or re-entrant surface towards the rail so as to press the wall resiliently against the rail.

3. A fencing system according to either of claims 1 or 2, characterised in that the pale includes a generally convex outer surface facing away from the rail.

4. A fencing system according to any preceding claim, characterised in that the concave or re-entrant surface includes a flat central portion, and the fastening means engage therewith.

5. A fencing system according to any preceding claim, characterised in that the concave or re-entrant surface includes a thickened portion, and the fastening means engage therewith.

6. A fencing system according to any preceding claim, characterised in that the concave or re-entrant surface further includes a threaded hole, and the fastening means comprise a bolt or the like which engages in the threaded hole.

7. A fencing system according to any of claims 3-6, characterised in that the pale has a generally crescent shaped hollow cross section, the cross section including rounded regions where the concave or re-entrant surface meets the convex surface, the rounded regions abutting the rail.

8. A fencing system according to any preceding claim, characterised in that the pale includes longitudinal indentations, the indentations inducing buckling of the pale when the pale is subjected to a predetermined force, the force being less than that required to break the fastening means and so detach the pale from the rail.

9. A method of erecting a fencing system as defined in any preceding claim, comprising fixing the rail horizontally in its intended final position, and fastening the pales to the rail.

10. A pale as defined in any of claims 1-8.

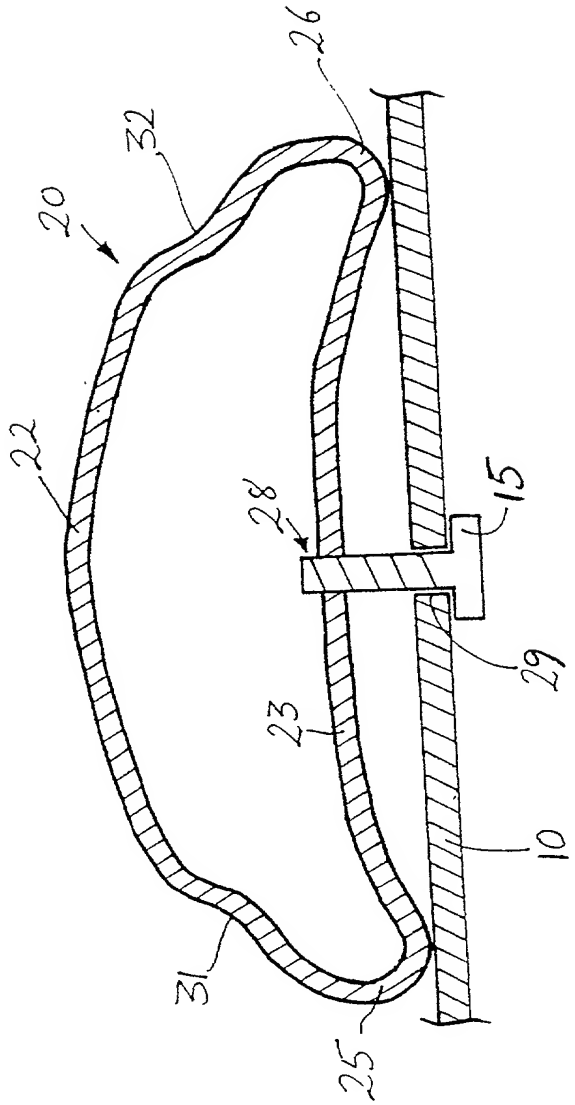

FIG.1

22122

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that: My residence, post-office address, and citizenship are as stated below next to my name,
I believe that I am the original, first, and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled

FENCING SYSTEM

the specification of which was filed on 8 September 2000 as PCT application PCT/GB00/03464.
I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.
I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.
I hereby claim foreign priority benefits under 35 USC 119 of any foreign applications for patent or inventor's certificate listed below and have also identified below any foreign applications for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Applications

Country	Number	Filing Date	Priority claimed
UK	9921204.5	9 September 1999	Yes

I hereby claim the benefit under 35 USC 120 of the United States Application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States Application(s) in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose material information as defined in 37 CFR 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Serial Number	Filing Date	Status
PCT/GB00/03464	8 September 2000	Pending

I hereby appoint as attorneys to prosecute this application and to transact all business connected therewith:
Herbert Dubno, Reg. 19,752; Jonathan Myers, Reg. 26,963; Andrew Wilford, Reg. 26,597 and each of them individually.
Address all correspondence to:

The Firm of Karl F. Ross, P.C.
Customer Number 535

5676 Riverdale Avenue, Box 900
Bronx, New York 10471-0900

Direct all telephone calls to: (718) 884-6600

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 USC 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole inventor: *Roger TIPPLE*

Inventor's signature _____ Date: 5/2/01

Residence: Low Willington, County Durham, United Kingdom GBX Citizen of United Kingdom

Post-office Address: 45 Abbot's Green, Low Willington, County Durham DL15 0QZ, United Kingdom